A GUIDE TO READFIX

The program as revised to 1 September 1966

APPENDIX III

to Letter Report on
NASA Grant NGR 47-005-036

Prepared by
R. L. Tomlin, Jr.

Report No. UVAL-4031-103-66U
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I. INTRODUCTION

The program, READFIX, is written in the Extended ALGOL language of the Burroughs B-5500 Data Processing System (with Disk File hardware). It is the program which is used for all initial handling, checking, and patching in the VIR Processing System. In keeping with the philosophy which has been maintained throughout in the VIR Processing System, READFIX has been designed for the greatest possible ease of use by the human beings who have need of it.

In the following there is given a complete description of the features of READFIX, together with details on the preparation of input data cards to control those features. Prior to this complete description, there appears a short section of remarks on the general nature and use of READFIX. The reader is advised that the document, The VIR Processing System, is also of interest as a source of information on READFIX. In particular, that document is the primary reference for information as to the file structures and record formats used in the major files associated with the program.

II. GENERAL REMARKS ON READFIX

After their initial punching in the form of individual strips of paper tape, VIRS are normally grouped together on longer paper tapes in batches of three or four dozen. At the time it is produced, each such batch is given a batch identification (or Batch ID) consisting of seven-or-fewer letters and digits. This identification is then used as the tag for the associated collection of VIRS during the time that it is handled by READFIX.

The READFIX processing for a batch begins with creating a magnetic tape image of the paper tape containing the batch. This image takes the form of a file on a multi-file reel, specifically, a partial reel file (PRF), and the association with the batch is maintained by setting the file identification (FID) of the PRF to the Batch ID in question. The fidelity

of this magnetic tape image is insured through the use of Hash Totals produced by READFIX.

Once a batch of VIRS has been placed on magnetic tape (i. e., a PRF image of it has been produced), all further handling may be carried out by using that tape. One handling operation of importance is the process of "diagnosing" the VIRS of the batch to see if they conform to the structural requirements for a VIR. Those which do not may be "patched" using READFIX, and the diagnostic process can then be used selectively to determine the effectiveness of that patching.

The patching process is based upon the structural characteristics of a PRF. When a VIR is produced by typing and punching on the Friden Flexowriter, there is a natural segmenting into lines of text whose terminal characters are carriage returns. In a PRF, this segmentation is distinguished by the use of line numbers. In the patching operation, each line of replacement text for a VIR is punched on a separate data processing card (patch card), and READFIX is then used to merge these patch cards with the associated PRF. The result is a new PRF, in which the desired lines have been altered as specified by the patch cards.

READFIX also provides a complete line of utility functions for batches of VIRS. This includes dumping of individual VIRS to the line printer and/ or to the card punch, copying magnetic tape reels containing PRF' s, printing directories of such reels and of individual PRF' s, creating disk file copies of PRF' s, etc.

It is perhaps of interest to make some remarks concerning what is called the "diagnosing" process, above. This is the same as the "SYNTAX CHECK" discussed in (III. 1), below (see the text for the MSTROPT option card), and it consists of a diagnostic scan operation. This operation may be characterized briefly as follows:

Given in the document, "Virginia Paper-Tape Input Record and Parallel Description of the NASA Magnetic Tape for 1401 and 1410 Search," is a description of the format of the VIR. Distinguished therein are the various flags which signal the presence and define the extent of the items of information within the VIR. These flags typically are clusters of various types of special characters and carriage control characters, the detailed hierarchy and nature of which will not be considered here. The total number of possible flags is in the neighbourhood of several dozen.

Given a VIR, there are certain flags which it must contain, these, corresponding to non-optional items of information such as title, imprint, call numbers, etc. Additionally, there is a class of flags which may or may not be present, and associated thereto is a collection of optional items of information. This being the case, the diagnosing process (or SYNTAX CHECK) is one of determining whether or not the structure defined by the flags present conforms to the format requirements for a VIR.

READFIX begins the diagnostic process by examining the leading characters of the subject VIR for certain non-optional flags. Following this, the structure is traced to the point were the first optional item is encountered. At this time, the scanning process may take one of several paths, the choice being dependent upon the nature of what has been detected thus far. In any event, this pattern is repeated, either in the sense of recursion or iteration, until the end of the VIR is finally reached. This, of course, would be the successful case. In a bad case, a structural error would be encountered, and READFIX would then print out diagnostic information attempting to pinpoint the trouble.

To summarize, then, the "diagnosing" process (or "SNYTAX CHECK") is aimed at determining the structural correctness of a VIR. Operationally, it consists of a rather complicated scanning operation which is performed by READFIX. If errors are detected, then READFIX emits messages and dump-outs which serve to indicate the cause of the trouble and to aid in the development of a cure for it.

The other major function of READFIX is concerned with its interaction with DOVTAPE, the master file maintenance program. When the need arises for patching of VIRS on the master file, VIRTAPE, the appropriate reel is submitted to READFIX, and the VIRS to be altered are read and used to create a PRF. This PRF may then be patched in the normal way using READFIX, and the updated PRF thus produced can then be merged back into the master file during a run of DOVTAPE.

It should be remarked that the various operations described above can normally be carried out simultaneously by READFIX, and, further, any number of batches of VIRS may be handled during a given session on the machine. The principal card image input file for READFIX has MFID equal to zero and FID equal to "CONTROL". It is the data within this file which activate and control the many program options available in READFIX. Given in the next section is a complete disucssion of this.

III. THE CARD-READER FILE, CONTROL

(III. 1) Introduction

The card-reader file whose FID is "CONTROL" serves to define the jobs which are to be done in a given run of READFIX. Structurally, the file consists of a master option card which is followed by arbitrarily many job packets.

The master option card controls general features which are either not characteristic of a single job, or which may be desired for all jobs in the run. The job packets serve to define "UNITS" of work, and the jobs described are handled in the order of occurrence of the associated packets within the file.

The job packets are of two types: batch packets and reel packets. The batch packets define jobs which deal with a single collection (batch) of VIRS, e.g., a single roll of paper tape, a single file on a partial reel, etc. The reel packets are used to describe jobs which involve a tape reel as a whole.

In that which follows, the master option card, the batch packets, and the reel packets are discussed in complete detail.

"MSTROPT" Option Card

ID Field = MSTROPT

Option	Significance
DUMP-TO	- - This field precedes an option specifying the line printer output medium. If it is absent, then the LP-MT printer option will be used.
PRINTER	- - If used, this field must immediately follow DUMP-TO, and it specifies that all output will be sent to the line printer only.
BACK-UP	- - If used, this field must immediately follow DUMP-TO, and it specifies that all output will be sent to a printer back-up tape only.
DIAGNOSE	- - An analysis of structural defects of any VIR handled (i.e., a "SYNTAX CHECK") will be provided the user in the form of a listing of the line printer. This option applies to both batch packets and reel packets.
DIRECTORY	- - A directory of the files included on the final output partial reel resulting from the processing of a batch packet will be printed just before EOF or

Option	Significance
DIRECTORY (continued)	zipping action. This consists of a printed display of the MFID, FID, and blocking information for each file on the reel. Additionally, the batch flag and directory header records of each file will be printed. By this means, then, the update information and accession number range will be provided for each batch. It should be noted that the request for such a directory within the processing of a reel packet is handled by the "REELHDR" option card (see below). Whenever this option is invoked, the partial reel will be rewound and locked before READFIX is exited. This fact must be considered if zipping is to be performed (see the option, "ZIP-TO", below).
ZIP-TO	- - A zip statement to the designated program (see below) will be executed just before READFIX is exited. It should be noted that if the final partial reel (created by READFIX) is to be accessed by the above zippee, then operator intervention will be required if the option, "DIRECTORY", is present.

Option	Significance
<Program ID>	- - This option field must immediately follow the option, "ZIP-TO". It is the program designator (the "ZIPPEE") and must be 7 or fewer characters in length. In the case of fewer than 7 characters, blanks will be appended to the right of the identifier.
SUMMARY	- - One or more listings of a summary of the program action will be provided. This option field must immediately precede the number of such listings desired.
<Integer>	- - This field specifies the number of summary listings desired, and it must consist of a single digit only. If the field is absent, one listing is assumed.
ECHO	- - The card images within the card-reader file, "CONTROL", will be sent to the line printer during the initial card reading process. This option immediately precedes the number of such listings desired.
<Integer>	- - This field specifies the number of listings of card-reader file, "CONTROL", desired, and it must consist of a single digit only. In the absence of this option, one listing will be provided.

Option	Significance
SPO	- - If this field is present, then complete directions for tape mounting and removal, response to NO FIL and MT REQD messages, etc., will be written on the SPO.

(III. 2) Batch Packets

Each batch packet begins with a "BATCHDR" option card which specifies the input medium, or media, and the program action desired.

The four main types of action, i. e., jobs, are as follows:

(1) Read VIRS from paper tape and/ or cards in order to copy them to a partial reel, in the process creating a new partial reel or adding to an existing one. The VIRS thus read may be sent to the line printer or card punch, either in conjunction with this copying action or exclusive of it.

(2) Read the VIRS from a partial reel file in order to copy them onto another partial reel file, with the option of patching portions of the input file during the copying process. (See "PATCHER" in the supporting document, The VIR Processing System).

It is also possible, as the primary job action, to copy the VIRS thus read to an intermediate disk file to await further program action described under section (4), below. In this case, supporting cards with ID field, "DELETE", within card-reader file, "CONTROL", permit the deletion of specified portions of the input partial reel file. At least one such "DELETE" card must be present.

Printer and/ or card punch dumping in conjunction with the above mentioned operation is optional.

(3) Read the file, VIRTAPE, in order to copy portions of it to a partial reel file. Supporting cards with ID field, "VIR-MAP", contained within control, specify the portions to be thus copied.

Again, dumping to the line printer and/ or card punch is optional.

(4) Read the intermediate disk file(s) previously created and retained as mentioned under section (2), and make a new partial reel file. Supporting cards with ID field, "WILDISK", specify the disk file(s) to be thus accessed.

Dumping to the line printer and/ or card punch is optional.

Appropriate dump description cards and tape handling cards are also contained within card-reader file, "CONTROL", and they are fully documented in the text below.

"BATCHDR" Option Card

ID Field = BATCHDR

Option	Significance
BATCH-ID	- - This field precedes the batch identification.
<ID>	- - A seven or fewer character identification for the batch. This ID is also used as the FID part of the file which is created or processed by READFIX. If fewer than seven characters are supplied, trailing blank filler will be used.

Option	Significance
INPUT-IS	- - This field precedes an option specifying the input medium, or media.
PAPER	- - This option, if used, must immediately follow the option field, INPUT-IS. It specifies that the paper-tape file with FID, "PAPRVIR", will provide the input for READFIX.
CARD	- - This option, if used, must immediately follow the option field, INPUT-IS. It specifies that the card-reader file with FID, "CARDVIR", will provide the input for READFIX.
PAPER-CARD	- - This option, if used, must immediately follow the option field, INPUT-IS. It specifies that READFIX will receive input from two sources, first from paper-tape file, "PAPRVIR", then from card-reader file, "CARDVIR".
CARD-PAPER	- - As above, READFIX will receive input from two sources. In this instance, first from "CARDVIR", then from "PAPRVIR". If used, this option field must immediately follow the option field, INPUT-IS.

Option	Significance
VIRTAPE	- - This option, if used, must immediately follow the option field, INPUT-IS, and specifies that the multi-reel file, VIRTAPE will provide the input for READFIX. The presence of this option implies partial reel creation.
PARTIAL	- - If used, this option must immediately follow the option field INPUT-IS. It specifies that a partial reel file will provide the input for READFIX.
WILDISK	- - If used, this option must immediately follow the option field, INPUT-IS. It specifies that "WILDISK" files contained on disk will be used to create a new partial reel file. The file identifications for the input files must be specified by later "WILDISK" option cards.
DUMP-ONLY	- - This option, indicates that some or all of the VIRS of the input file will be sent to the line printer and/or card punch, this being the only action performed for this particular batch. This option is never used with input medium, VIRTAPE or WILDISK. Supporting option cards will also be contained within card-reader file, "CONTROL".

Option	Significance
DUMP	- - This option indicates that records will be sent to the line printer and/ or card punch in combination with other program action. Supporting option cards are contained within "CONTROL."
COMPARE	- - When this option field is used, input may be from paper tape and/ or cards only. The input records so supplied will be compared with corresponding records from the partial reel file whose FID is the Batch ID, above. This comparison will be made on a line-to-line basis for all VIRS involved. The occurrence of a discrepancy causes both the lines involved to be printed out. If a listing has been requested for the associated VIR, then such lines will appear among those of that listing. Otherwise, a "DISCREPANCY PRINTOUT" consisting of these lines alone will be produced.
MAKE-PARTIAL	- - This option field indicates that a partial reel file will be created. Its MFID will be "PARTIAL", and its FID will be the Batch ID, described above. This option field may not be present when the input is a partial reel file.

Option	Significance
COPY-PARTIAL	- - This option field indicates that the specified file on the input partial reel (i. e., the one with FID equal to the Batch ID) is to be copied onto another partial reel, either creating a new partial reel or adding to an existing one.
PATCH-PARTIAL	- - This option field indicates that updating action is to take place on a partial reel file, with card-reader file "PATCHER" providing the updating information.
MAKE-WILDISK	- - This option field indicates that VIRS read from a partial reel file are to be copied to an intermediate disk file with multi-file ID "WILDISK" and FID equal to the batch identification. Supporting input card(s) with ID field, "DELETE", must be contained within card-reader file, "CONTROL". [Note: As many as three card-reader files may be involved in supplying input data to READFIX. Of these, control is required, and must appear first in the reader. PATCHER and CARDVIR are optional and must follow control in the reader. If both are present, then PATCHER must precede CARDVIR.]

"NEWREEL" Option Card

ID Field = NEWREEL

Option	Significance
OUTAPE	- - This option field immediately precedes the number of the output partial tape reel.
<Integer>	- - This is the number of the output partial tape reel.
ACCT	- - This option field precedes the account ID of the tape mentioned above.
<Account ID>	- - This is a five-character identification for the account to which the above mentioned tape is assigned.
ADDTAPE	- - Any partial file created by READFIX during this run will be added to an existing partial reel. In the absence of this option field, creation of a partial reel will be assumed. If the option "ADDTAPE" is present, then it must be followed by a file identifier as described below.

Option	Significance
<File ID>	- - This is the file identification part of a file on the existing partial reel referred to under **ADDTAPE**, above. Any partial file created during this run will be added to that reel in the position on tape just beyond this file.
INITIAL	- - This option field indicates that the tape specified on this card is the first input tape of a number of input tapes of its type (PARTIAL or VIRTAPE), or that it is the first output tape of a number of output tapes, to be used during this run or READFIX. It should be noted that these indications as to whether a tape is initial or not apply only to the type of packet containing the NEWREEL card in question. That is to say, for a tape requested within a reel packet (see below), any reference to being initial or not initial is understood relative to the collection of reel packets for this run. An entirely similar statement holds for tapes requested within batch packets.

Option	Significance
PARTIAL	- - This option field indicates that the input tape specified by this card is a partial reel.
VIRTAPE	- - This option field indicates that the input tape specified by this card is a VIRTAPE reel.
TAPE	- - This option field must immediately precede the number of the input tape.
<Integer>	- - This is the number of the input tape reel. Only one reel of input tape may be used per batch.
ACCT	- - This option field precedes the account ID of the tape mentioned above.
<Account ID>	- - This is the five-character identification for the account to which the above mentioned tape is assigned.
WRITE-RING	- - This option field specifies that a WRITE-RING is to be placed on an input partial reel.

"VIR-MAP" Option Card

ID Field = VIR-MAP

Option	Significance
ACCESSION	- - This option field indicates the use

Option	Significance
ACCESSION (continued)	of accession numbers to designate VIRS. The absence of this option field indicates the use of seven-digit record numbers to designate the VIRS. If used, this option field must immediately follow the ID field, "VIR-MAP".
ALL	- - This field indicates that all VIRS from a given VIRTAPE reel are to be used in creating the partial reel file.
DISCRETE	- - This option field immediately precedes one or more VIR designators (see <Integer>, below).
ALL-BUT	- - This option field immediately precedes one or more VIR designators (see <Integer>, below).
<Integer> <Integer> . . . <Integer>	- - These integers designate VIRS which are to be copied onto a partial reel file. If the option field immediately preceding them is "DISCRETE", then the VIRS thus designated are copied onto a partial reel file. If the option field which immediately precedes them is "ALL-BUT", then all the VIRS contained on a given VIRTAPE reel except those hereby designated are copied onto a partial reel file.

Option	Significance
	If the option field, "ACCESSION", is present on this card, then these fields must be seven-digit integers of the form YYXXXXX, where YYVXXXXX is the accession number of the VIR being designated. Otherwise, seven digit record numbers are to be used. Such VIR designators must be given serially, and no more than ten designators may appear on a single card. More than one card may be used, if desired.
RECORDS	- - This option field immediately precedes a VIR designator marking the beginning of a cluster of records on a VIRTAPE reel.
<Integer>	- - This is the designator of the first record of a cluster of records to be copied onto a partial reel file. If the option field, "ACCESSION", is present, then it must be a seven-digit integer of the form, YYXXXXX, representing the accession number assigned to the VIR in question. Otherwise, it must be the seven-digit record number of the VIR.
THRU	- - This option field immediately precedes a VIR designator marking the end of a cluster of VIRS.

Option	Significance
<Integer>	- - This is the designator of the last VIR of a cluster of VIRS to be copied onto a partial reel file. If the option "ACCESSION" is present, it must be a seven-digit integer of the form, YYXXXXX, representing the accession number of the VIR in question. Otherwise, it must be the seven-digit record number of the VIR.
FROM	- - This option field immediately precedes a VIR designator pertaining to one cluster of VIRS.
<Integer>	- - This is the designator of the first VIR of a cluster of VIRS, said cluster containing this VIR and all following VIRS through to End-of-File. If the option, "ACCESSION", is present, this field must be a seven-digit integer of the form, YYXXXXX, representing the accession number assigned to the VIR in question. Otherwise, the number must be the seven-digit record number. Note: Only one cluster of records may be specified per "VIR-MAP" option card. A discrete listing of VIRS also requires exclusive use of a "VIR-MAP" card, however more than one "VIR-MAP" card may be used per batch, if desired.

"DELETE" Option Card

ID Field = DELETE

Option	Significance
ACCESSION	- - This option field indicates the use of accession numbers to designate VIRS. The absence of this option field indicates the use of two-digit relative position numbers to designate the VIRS. If used, this option field must immediately follow the ID field, "DELETE".
NONE	- - This option field indicates that none of the VIRS being stored on a "WILDISK" disk file are to be marked for later deletion.
DISCRETE	- - This option field immediately precedes one or more VIR designators (see <Integer>, below).
ALL-BUT	- - This option field immediately precedes one or more VIR designators (see <Integer>, below).
<Integer> <Integer> . . . <Integer>	- - These designators specify the VIRS which are to be marked for later deletion as the records are copied from the partial reel file onto a "WILDISK" file. The actual deletion will take place as the accumulated "WILDISK" files are used in

Option	Significance
	a subsequent job to form a new partial reel file. If the option field which immediately precedes them is "DISCRETE", then the VIRS thus designated are marked for deletion. If the option field immediately preceding them is "ALL-BUT", then all the VIRS except those hereby designated are marked for deletion. If the option field, "ACCESSION", is present on this card, then these should be seven-digit integers as described in the text under "VIR-MAP". Otherwise, the designators should be two-digit integers specifying the relative positions (within the partial reel file) of the VIRS to be marked. Such VIR designators must be given serially, and no more than ten designators may appear on a single card. More than one card may be used, if desired.

All the constructs permitted on the "VIR-MAP" card for the description of clusters of VIRS are also available for "DELETE" cards, with the exception of the cluster description, "ALL".

"WILDISK" Option Card

ID Field = WILDISK

Option	Significance
<File ID>	- - These are the file identification
<File ID>	parts of the disk files with MFID,

Option	Significance
.	"WILDISK". The file, or files, listed
.	on this option card are to be used in
<File ID>	creating a partial reel file.
	No more than ten such file identifiers may appear on a single card. The contents of these files will be used to create a partial reel file, and the order in which the files are used coincides with that in which they are given on the "WILDISK" card(s).

"DUMPHDR" Option Card

ID Field = DUMPHDR

Option	Significance
BATCHDIR	- - The batch directory of the final output partial reel file will be printed.
PARITY-MAP	- - A map of the parity errors encountered will be printed. This option is relevant in the case of paper-tape input only.
HASHVIR	- - For each VIR in the batch, a "HASH TOTAL" (or CHECKSUM) will be created and printed out. Also, a HASH TOTAL for the batch as a whole will be obtained and displayed. The characters used to create such a total will be those of the

Option	Significance
HASHVIR (continued)	lines in the associated VIR, excluding the leading word of VIR number and line number information.
DBL	- - The line printer will double space after each line of print. In the absence of this option, the printer will single space after each line of print.
PAGE	- - The line printer will skip to the top of a new page for each VIR which is being listed.
DIAGNOSE	- - An analysis of the structural defects of any VIR handled within this batch (i. e., a "SYNTAX CHECK") will be provided the user in the form of a listing on the line printer.
VIR-LIST	- - This option field indicates that certain (perhaps all) VIRS handled within this work unit are to be dumped to the line printer and/ or card punch. Supporting card(s) with ID fields, "PRINT" or "PUNCH" must follow.

"PRINT" Option Card

ID Field = PRINT

Option	Significance
ACCESSION	- - This option field indicates the use of

Option	Significance
ACCESSION (continued)	accession numbers to designate VIRS. The absence of this option field indicates the use of seven-digit record numbers to designate the VIRS. If used, this option field must immediately follow the ID field, "PRINT".
ALL	- - This field indicates that all of the VIRS of the batch will be sent to the line printer.
DISCRETE	- - This option field immediately precedes one or more VIR designators.
ALL-BUT	- - This option field immediately precedes one or more VIR designators.
<Integer> <Integer> . . . <Integer>	- - These integers designate VIRS. If the option field which precedes them is "DISCRETE", then the VIRS thus designated will be sent to the line printer. If the option field which precedes them is "ALL-BUT", then all of the VIRS of the batch except those hereby designated will be sent to the line printer. If the option field, ACCESSION", is present on this card, then these fields must be seven-digit integers of the form, YYXXXXX, where YYVXXXXX is the accession number

Option	Significance
	of the VIR being specified. Otherwise, two-digit relative positions are to be used. Such VIR designators must be given serially, and no more than ten designators may appear on a single card. If more than one "PRINT" card is used, then such "PRINT" cards must be contained within the packet as an unbroken series.

All of the constructs permitted on the "VIR-MAP" card for the description of clusters of VIRS are also available for "PRINT" cards.

"PUNCH" Option Card

ID Field = PUNCH

Option	Significance
ACCESSION	- - This option field indicates the use of accession numbers to designate VIRS. The absence of this option field indicates the use of seven-digit record numbers to designate the VIRS. If used, this option field must immediately follow the ID field, "PUNCH".
ALL	- - This field indicates that all of the VIRS of the batch will be sent to the card punch.

Option	Significance
DISCRETE	- - This option field immediately precedes one or more VIR designators.
ALL-BUT	- - This option field immediately precedes one or more VIR designators.
<Integer> <Integer> . . . <Integer>	- - These integers designate VIRS. If the option field which precedes them is "DISCRETE", then the VIRS thus designated will be sent to the card punch. If the option field which precedes them is "ALL-BUT", then all of the VIRS of the batch except those hereby designated will be sent to the card punch. If the option field, "ACCESSION", is present on this card, then these fields must be seven-digit integers of the form, YYXXXXX, where YYVXXXXX is the accession number of the VIR being specified. Otherwise, two-digit relative positions are to be used. Such VIR designators must be given serially, and no more than ten designators may appear on a single card. If more than one "PUNCH" card is used, then such "PUNCH" cards must be contained within the packet as an unbroken series.

All of the constructs permitted on the "VIR-MAP" card for the description of clusters of VIRS are also available for "PUNCH" cards.

Layout of the Cards within a Batch Packet

Card(s)	Remarks
<"BATCHDR" Option Card>	- - This card, which must be present, specifies batch identification, input medium, and job action, and it signals the presence of dump description cards later in the packet.
<"NEWREEL" Option Card(s)>	- - Each such card specifies a tape to be used in processing this batch packet. The presence of the card invokes handling messages on the SPO. Such messages, of course, serve to release tapes which are no longer needed, and to request the supplying of new tapes.
<Input Support Cards>	- - Either "VIR-MAP" or "DELETE" or "WILDISK" option cards, depending on the job option for this packet.
<"DUMPHDR" Option Card>	- - This card must be present if dumping is signalled on the "BATCHDR" card.
<Dump Support Cards>	- - "PRINT" and "PUNCH" option cards which designate VIRS to be sent to the line printer and/ or card punch.

(III. 3) Reel Packets

Each reel packet begins with a "REELHDR" option card which contains tape-handling information, and which specifies the program action desired.

The three main types of action are as follows:

(1) Read files from a partial reel in order to copy them onto another partial reel. Supporting cards with ID field, "REELFID", within card-reader file, "CONTROL," specify the files to be thus copied. A multi-file directory may be obtained either before or after the copying process (see (3), below).

(2) Read VIRS from a partial reel in order to provide a printed reel map. This consists of a table of information which shows the correspondence between groups of accession numbers and selected Batch IDS (partial reel files). Also displayed are the dates of creation and most recent updating for the VIRS involved. Supporting cards with ID field, "REELFID", specify the files for which information is to be included in the reel map. Here, too, a directory may be obtained (see (3), below).

(3) A directory in the sense of multi-file directory may be obtained. (See option, "DIRECTORY", under "MSTROPT" option card). As mentioned above, when partial reel files are being copied onto a second partial reel, the directory may be obtained for the input reel before the copying action and/ or for the output reel after the copying action. Whenever a directory of the input reel is to be obtained, then a write ring must be placed on this reel. (See "NEWREEL" option card under batch packets.)

If a directory is obtained in conjunction with reel-map job action, then it will be a directory of the input partial reel.

It is, of course, possible to submit a reel packet whose sole request is that an input partial reel be mounted and that a directory of it be obtained (in this case, the option field, directory, must appear on the "REELHDR" card).

It should also be noted that the input tape for a reel packet will always be opened under the name, Partial/ <The FID which is preceded by the option, "FIRST-FILE" on the "REELHDR" option card>. The "REELHDR" card is described below.

"REELHDR" Option Card

ID Field = REELHDR

Option	Significance
COPY-FILES	- - This option field indicates that one or more specified files on the input partial reel are to be copied onto another partial reel. If the option, ADDTAPE, is present on the "NEWREEL" card, then the output tape will be positioned as described in the comment for that option under "NEWREEL" option card, above. In the absence of ADDTAPE, the output tape will be opened under the name, Partial/CREATON, and will then be rewound for later renaming. This option is to be used exclusively of option, "REELMAP", below.
REEL-MAP	- - This option field indicates that tabulated information for one or more specified files on the input partial reel will be provided. (See section (2), under reel packets.)

Option	Significance
REEL-MAP (continued)	This option and option, "COPY-FILES", above, are mutually exclusive.
DIRECTORY	- - This field indicates that a multi-file directory for the input partial reel and/ or the output partial reel will be provided. (See options, "BEFORE" and "AFTER", below.)
BEFORE	- - This option field is used in conjunction with option, "COPY-FILES". It indicates that the multi-file directory called for by use of the option, "DIRECTORY", above, shall be the directory for the input partial reel.
AFTER	- - This option field, also used in conjunction with options, "COPY-FILES" and "DIRECTORY", indicates that the directory called for is to be that of the output partial reel.
FIRST-FILE	- - This option field, which must be present, immediately precedes a file identification.
LAST-FILE	- - This option field, which must be present, immediately precedes a file identification.

Option	Significance
<File-ID>	- - If the preceding option field is "FIRST-FILE", then this is the file identification of the file which is located in the first file position which is of interest on the input reel. If the preceding option field is "LAST-FILE", then this is the file identification of the file located in the last file position on the input partial reel.

"REELFID" Option Card

ID Field = REELFID

Option	Significance
ALL	- - This option field indicates that all the files on a given partial reel are to be used in carrying out the specified job action for this reel packet.
DISCRETE	- - This option field immediately precedes one or more file identifiers.
ALL-BUT	- - This option field immediately precedes one or more file identifiers.

Option	Significance
<File ID> <File ID> . . . <File ID>	- - These are file identification parts of files with MFID, "PARTIAL". If the option field preceding them is "DISCRETE", then these files are used in carrying out the specified job action for this reel packet. If the option field preceding them is "ALL-BUT", then all of the files on the given partial reel except those hereby listed are used in carrying out the reel packet action. Such file identifiers must be given in the order of their appearance on the input partial reel, and no more than ten file identifiers may be used per card.
FILE	- - This option field immediately precedes a file identifier, marking the beginning of a cluster of files on a partial reel. It must be used in combination with option, "THRU", below.
THRU	- - This option field immediately precedes a file identifier pertaining to one cluster of files.
<File ID>	- - This is the file identification part of a file, with MFID, "PARTIAL". If the option preceding it is "FILE", then it is the first file of a cluster of files to be used in carrying out the job action for this reel packet.

Option	Significance
<File ID> (continued)	If the option preceding it is "THRU", then it is the last file of the cluster mentioned above. If the option preceding it is "FROM", then it is the first file of a cluster of files to be used in the reel packet action. This cluster contains this file and all remaining files which lie beyond the tape position of this file on the input partial reel. Note: Only one cluster of files may be specified per "REELFID" option card. A discrete listing of file identifiers also requires exclusive use of a "REELFID" card, however more than one "REELFID" card may be used per reel packet, if desired.

Layout of the Cards within a Reel Packet

Card(s)	Remarks
<"REELHDR" Option Card>	- - This card, which must be present, specifies the job action and lists the names of the first and last files on the input partial reel.
<"NEWREEL" Option Card(s)>	- - Each such card specifies a tape to be used in processing this reel packet.

Card(s)	Remarks
<"NEWREEL" Option Card(s)> (continued)	The presence of the card invokes the writing of a tape handling message on the SPO. Such messages serve to request the supplying of new tapes.
<Input Support Cards>	- - These are "REELFID" option cards.

(III. 4) Note on Paper Tape Input

READFIX is so arranged that the settings required for reading paper tape files are:

STOP-AND-STORE = "8" (or ←),

EOT = "4-2-1" (or #).

These correspond, in Flexowriter language, to the carriage return and stop code, respectively.

Also, paper tape files are requested with MFID/ FID equal to "VIRS OF"/<Batch ID>, where the batch identification is that of the packet requesting the file.

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1. Tomlin, R., Jr., A. J. Feeman, Elaine Pleasants, Anthea Hailey, and Curtis Brooks, "Virginia Paper-Tape Input Record and Parallel Description of the NASA Magnetic Tape for 1401 and 1410 Search," Appendix I to Letter Report on NASA Grant NGR 47-005-036, University of Virginia Library, Charlottesville, Report No. UVAL-4031-101-66U; September 1966.

2. Tomlin, R. L., Jr., "The VIR Processing System," Appendix II to Letter Report on NASA Grant NGR 47-005-036, University of Virginia Library, Charlottesville, Report No. UVAL-4031-102-66U; September 1966.

3. Tomlin, R. L., Jr., "A Guide to DOVTAPE," Appendix IV to Letter Report on NASA Grant NGR 47-005-036, University of Virginia Library, Charlottesville, Report No. UVAL-4031-104-66U; September 1966.

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